

IN THE CLAIMS:

Please cancel (without prejudice) and amend pending claims and add new claims as follows:

By 1. (Currently amended) A microelectronic spring structure, comprising:

a substrate;

a beam, ~~having a base portion, a cantilevered portion extending from said base portion, and a tip portion adjoining said cantilevered portion at an end thereof opposite to said base portion, said beam secured to said substrate at said base portion;~~

an elongate post component between said substrate and said beam, whereby said beam is spaced apart from and secured to said substrate, said post component comprised of a wire core coated with a structural material; and

a protruding member mounted to said substrate, and disposed under ~~said cantilevered portion of said beam spaced apart from said tip portion;~~

wherein said microelectronic spring structure is reversibly deflectable between an undeflected position wherein the protruding member does not contact said beam, and a deflected position wherein said protruding member contacts ~~said cantilevered portion of said beam at a position spaced apart from said tip portion.~~

2. (Original) The microelectronic spring structure of Claim 1, further comprising a tip structure for contacting a terminal of an electronic component, said tip structure mounted to and disposed above a surface of said beam opposite to said substrate.

3. (Currently amended) The microelectronic spring structure of Claim 2, wherein said tip structure is mounted to ~~said tip portion~~ an end of said beam.

4. (Original) The microelectronic spring structure of Claim 2, wherein said tip structure is positioned above all of said beam, relative to said substrate.

5. (Original) The microelectronic spring structure of Claim 2, wherein said tip structure comprises a stand-off mounted to said beam, and a contact tip mounted to said stand-off.

6. (Cancelled)

7. (Original) The microelectronic spring structure of Claim 1, wherein said beam is connected to a first terminal of an electronic component on said substrate, and said protruding member is connected to a second terminal of the electronic component on said substrate.

8. (Original) The microelectronic spring structure of Claim 1, wherein said beam is connected to a terminal of an electronic component on said substrate, and said protruding member is not connected to any electronic component.

9. (Original) The microelectronic spring structure of Claim 1, wherein said beam and said protruding member are connected to a shared terminal of an electronic component on said substrate.

10. (Original) The microelectronic spring structure of Claim 1, wherein said beam is electrically isolated from said protruding member when said microelectronic spring structure is in the undeflected position.

11. (Original) The microelectronic spring structure of Claim 1, wherein said beam is formed by a lithographic process on a sacrificial substrate.

12. (Original) The microelectronic spring structure of Claim 1, wherein said beam is formed by lithographic process on a sacrificial layer.

13. (Cancelled)

14. (Previously amended) The microelectronic spring structure of Claim 1, wherein said post component comprises a column element.

15. (Previously amended) The microelectronic spring structure of Claim 1, wherein said post component comprises a group of column elements.

16. (Cancelled)

B, 17. (Original) The microelectronic spring structure of Claim 1, wherein said beam is straight and elongate.

and 18. (Original) The microelectronic spring structure of Claim 1, wherein said beam is contoured.

19. (Original) The microelectronic spring structure of Claim 1, wherein said protruding member comprises a wire bonded to said substrate.

20. (Original) The microelectronic spring structure of Claim 19, wherein said protruding member further comprises a structural material coated over said wire.

21. (Currently amended) The microelectronic spring structure of Claim 1, wherein said beam further comprises a separately extending portion, said separately extending portion extending from said base portion in a direction different from said cantilever portion post component is disposed under a middle portion of said beam.

22. (Currently amended) The microelectronic spring structure of Claim 21, further comprising an electronic device connected to ~~said separately extending portion~~ of said beam and to said substrate.

23. (Original) The microelectronic spring structure of Claim 22, wherein said electronic device comprises a capacitor.

24. (Original) The microelectronic spring structure of Claim 1, wherein said protruding member comprises a substantially compressible member.

25. (Original) The microelectronic spring structure of Claim 24, wherein said protruding member comprises an elastic membrane enclosing a fluid.

26. (Original) The microelectronic spring structure of Claim 1, wherein said protruding member comprises an adjustable pressure device.

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(b) 27. (Original) The microelectronic spring structure of Claim 26, wherein said protruding member comprises a rotating cam.

28-38 (Previously cancelled)

39. (Currently amended) A microelectronic spring structure, comprising:

a substrate;

a beam, having a base portion, a cantilevered portion extending from said base portion, and a tip portion adjoining said cantilevered portion at an end thereof opposite to said base portion, said beam secured to said substrate at said base portion; ~~wherein said beam is mounted to said substrate and said cantilevered portion thereof extends away from said substrate;~~ and

a protruding member mounted to said substrate, and disposed under said cantilevered portion of said beam, said protruding member comprising a wire core bonded to said substrate and encased in a structural material;

wherein said microelectronic spring structure is reversibly deflectable between an undeflected position wherein the protruding member does not contact said beam, and a deflected position wherein said protruding member contacts said beam.

40. (Original) The microelectronic spring structure of Claim 39, wherein said beam is electrically isolated from said protruding member when said microelectronic spring structure is in the undeflected position.

41. (Original) The microelectronic spring structure of Claim 39, wherein said beam is formed by a lithographic process.

42. (Original) The microelectronic spring structure of Claim 39, further comprising a tip structure for contacting a terminal of an electronic component, said tip structure mounted to said tip portion of said beam and positioned above all of said beam relative to said substrate.

43. (Original) The microelectronic spring structure of Claim 39, wherein said protruding member is spaced apart from said tip portion, whereby said protruding member contacts said cantilevered portion of said beam at a position spaced apart from said tip portion when said microelectronic spring structure is in the deflected position.

44. (Original) The microelectronic spring structure of Claim 39, wherein said beam is straight and elongate.

45. (Original) The microelectronic spring structure of Claim 39, wherein said beam is contoured.

46. (Previously amended) The microelectronic spring structure of Claim 39, wherein said protruding member comprises a column, said column having a first end attached to said substrate, and a second end disposed under said beam above said substrate.

47. (Previously cancelled)

48. (Currently amended) A microelectronic spring structure, comprising:

a substrate;

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a beam, having a base portion, a cantilevered portion extending from said base portion, and a tip portion adjoining said cantilevered portion at an end thereof opposite to said base portion, said ~~beam~~ base portion secured to said substrate ~~at said base portion~~;

~~a protruding member connected to said beam, and disposed under said cantilevered portion of said beam; and~~

a tip structure for contacting a terminal of an electronic component, said tip structure mounted to and disposed above a first surface of said beam opposite to said substrate;

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a protruding member extending from a second surface of said beam between said tip portion and said base portion, said second surface opposite said first surface;

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wherein said microelectronic spring structure is reversibly deflectable between an undeflected position wherein the protruding member does not contact said substrate, and a deflected position wherein said protruding member contacts said substrate and said tip structure is reverse wiped.

49. (Previously amended) The microelectronic spring structure of Claim 48, wherein said tip structure is located at a position intermediate between said base portion and said tip portion.

50. (Previously amended) The microelectronic spring structure of Claim 48, wherein said tip structure is mounted to said tip portion of said beam.

51. (Currently amended) The microelectronic spring structure of Claim 48, wherein said ~~beam~~ base portion is mounted to said substrate and said cantilevered portion thereof extends away from said substrate.

52. (Currently amended) The microelectronic spring structure of Claim 48, further comprising a post component ~~mounted to~~ securing said base portion to said substrate ~~and to said base portion of said beam~~, whereby said base portion of said beam is spaced apart from and secured to said substrate.

53. (Original) The microelectronic spring structure of Claim 48, wherein said beam is connected to a first terminal of an electronic component on said substrate, and said protruding member contacts a second terminal of the electronic component on said substrate, when said microelectronic spring structure is in the deflected position.

54. (Original) The microelectronic spring structure of Claim 48, wherein said beam is connected to a terminal of an electronic component on said substrate, and said protruding member does not contact any electronic component, when said protruding member is in contact with said substrate.

55. (Original) The microelectronic spring structure of Claim 48, wherein said beam and said protruding member are connected to a shared terminal of an electronic component on said substrate, when said microelectronic spring structure is in the deflected position.

56. (Original) The microelectronic spring structure of Claim 48, wherein said beam is formed by a lithographic process on a sacrificial substrate.

57. (Original) The microelectronic spring structure of Claim 48, wherein said beam is formed by a lithographic process on a sacrificial layer.

58. (Original) The microelectronic spring structure of Claim 52, wherein said post component comprises a column element, said column element comprised of a wire core coated with a structural material.

59. (Original) The microelectronic spring structure of Claim 52, wherein said post component comprises a group of column elements.

60. (Original) The microelectronic spring structure of Claim 59, wherein each column element of said group is comprised of a wire core coated with a structural material.

61. (Original) The microelectronic spring structure of Claim 48, wherein said beam is straight and elongate.

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cont 62. (Original) The microelectronic spring structure of Claim 48, wherein said beam is contoured.

63. (Original) The microelectronic spring structure of Claim 48, wherein said protruding member comprises a wire bonded to said beam.

64. (Currently amended) The microelectronic spring structure of Claim ~~48~~ 63, wherein said protruding member further comprises a structural material coated over said wire.

65. (Original) The microelectronic spring structure of Claim 48, wherein said protruding member is integrally formed with said beam.

66. (Currently amended) The microelectronic spring structure of Claim ~~49~~ 48, wherein said protruding member extends from said beam towards said tip ~~structure~~ portion and towards said substrate.

67. (Previously cancelled)

68. (Currently amended) A microelectronic spring structure, comprising:

a substrate;

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conf a beam, having a base portion, a cantilevered portion extending from said base portion, and a separately extending portion extending from said base portion in a direction different from said cantilever portion, ~~said beam secured to said substrate at said base portion;~~

a post component mounted to said substrate and to said base portion of said beam, whereby said base portion of said beam is spaced apart from and secured to said substrate; and an electronic device connected to said separately extending portion of said beam and to said substrate;

wherein said microelectronic spring structure is reversibly deflectable between an undeflected position wherein said cantilevered portion of said beam is substantially free of strain, and a deflected position wherein said cantilevered portion is deflected towards said substrate under the influence of an externally applied force.

69. (Original) The microelectronic spring structure of Claim 68, wherein said beam further comprises a tip portion adjoining said cantilevered portion at an end thereof opposite to said base portion.

70. (Original) The microelectronic spring structure of Claim 69, further comprising a tip structure for contacting an electronic component, said tip structure mounted to said tip portion of said beam.

71. (Original) The microelectronic spring structure of Claim 68, wherein said electronic device comprises a capacitor.

72. (Original) The microelectronic spring structure of Claim 68, wherein said beam is formed by a lithographic process on a sacrificial substrate.

73. (Original) The microelectronic spring structure of Claim 68, wherein said post component comprises a column element, said column element comprised of a wire core coated with a structural material.

74. (Original) The microelectronic spring structure of Claim 73, wherein said post component comprises a group of column elements.

75. (Original) The microelectronic spring structure of Claim 74, wherein each column element of said group is comprised of a wire core coated with a structural material.

76. (Original) The microelectronic spring structure of Claim 68, wherein said beam is straight and elongate.

77. (Original) The microelectronic spring structure of Claim 68, wherein said beam is contoured.

78. (Currently amended) A microelectronic spring structure, comprising:

a substrate;

a beam, having a base portion, and a cantilevered portion extending from said base portion, said beam secured to said substrate at said base portion; and

an adjustable ~~pressure~~ device disposed under said beam, ~~wherein said adjustable pressure device comprises a mechanical actuator~~ providing a stop for said beam that is adjustable between at least two different positions.

79. (Cancelled)

80-82 (Previously cancelled)

83. (Currently amended) The microelectronic spring structure of Claim 78, wherein ~~mechanical actuator~~ said adjustable device comprises an elastic membrane enclosing a fluid.

84. (Cancelled)

85. (Previously cancelled)

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86. (Currently amended) The microelectronic spring structure of Claim 78, further comprising a post component ~~mounted to~~ securing said substrate ~~and~~ to said base portion of said beam, whereby said base portion of said beam is spaced apart from and secured to said substrate.

87. (Original) The microelectronic spring structure of Claim 78, wherein said beam is formed by a lithographic process on a sacrificial substrate.

88. (Previously amended) The microelectronic spring structure of Claim 86, wherein said post component comprises a column element, said column element comprised of a wire core coated with a structural material.

89. (Original) The microelectronic spring structure of Claim 86, wherein said post component comprises a group of column elements.

90-94 (Previously cancelled)

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95. (New) A microelectronic spring structure, comprising:
a substrate;
a beam, having a base portion, and a cantilevered portion extending from said base portion, said beam secured to said substrate at said base portion; and
a compressible protruding member disposed under said beam.

96. (New) The microelectronic spring structure of Claim 95, wherein a compressibility of said compressible protruding member is adjustable.

97. (New) The microelectronic spring structure of Claim 95, wherein said compressible protruding member comprises an elastic membrane enclosing a fluid.

98. (New) The microelectronic spring structure of Claim 95, further comprising a post component securing said base portion to said substrate, whereby said base portion is spaced apart from and secured to said substrate.

99. (New) The microelectronic spring structure of Claim 95, wherein said beam is formed by a lithographic process on a sacrificial substrate.

100. (New) The microelectronic spring structure of Claim 95, wherein said post component comprises a column element, said column element comprised of a wire core coated with a structural material.

101. (New) The microelectronic spring structure of Claim 95, wherein said post component comprises a group of column elements.

102. (New) The microelectronic spring structure of Claim 39, further comprising a post component securing said base portion to said substrate, whereby said base portion is spaced apart from and secured to said substrate.

103. (New) The microelectronic spring structure of Claim 39, wherein said cantilevered portion of said beam extends away from said substrate.
